FY2002 SUMMARY
RARE PLANT PROGRAM

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Rare Plant Program Members:
Shelly Benson
Michelle Coppoletta
Sasha Gennet
Michael Faden

Prepared by:
Shelly Benson and Michelle Coppoletta

Inventory

The 2002 inventory season at Point Reyes National Seashore (PRNS) was a productive one. As a result of the field surveys conducted by resource management staff and volunteers from January through September 2002, sixty-seven previously unrecorded rare plant populations were documented and mapped using Global Positioning System (GPS) (Table 1). Data were collected from these populations to document number of rare plants and describe the habitat, land use, and overall site quality. All populations visited were evaluated for existing and potential threats to the rare plants.

One of the highest priority species for inventory in the 2002 season was robust spineflower, *Chorizanthe robusta* var. *robusta.* This is a Federally Endangered species that was documented for the first time in the Seashore in the spring of 2002. Prior to this find, robust spineflower was known to occur only in Santa Cruz and Monterey counties, in only four populations. The Point Reyes occurrence is a very important find relative to the viability of the species as well as a significant northern extension to the species' range. This species is easily confused with two other rare spineflowers in the park, San Francisco Bay spineflower (*C. cuspidata* var. *cuspidata*) and woolly-headed spineflower (*C. cuspidata* var. *villosa*), and may explain why robust spineflower has gone undetected until this year. This summer we inventoried approximately two hundred hectares of coastal prairie for robust spineflower. Two populations were found and mapped, each estimated to contain greater than five thousand individuals. We began discussion for a monitoring strategy and management plan for this species.

Another new addition to the Seashore's species list in the summer of 2002 was coastal bluff morning glory, *Calystegia prupurata* ssp. *saxicola,* CNPS List 1B 2-2-3. Coastal bluff morning glory is easily confused with two other species of morning glory that occur in the park, coastal morning glory (*C. purpurata* ssp. *purpurata*) and western morning glory (*C. occidentalis* ssp. *occidentalis*), a likely explanation for not spotting the rare morning glory until this year. Coastal bluff morning glory was discovered during the inventory effort at Tomales Point where two hundred hectares of coastal grassland were surveyed for a suite of rare grassland plant species including Marin checker lily (*Fritillaria affinis* var. *tristulis*), Franciscan thistle (*Cirsium andrewsii*), and San Francisco owl's clover (*Triphysaria floribunda*).

North coast phacelia, *Phacelia insularis* var. *continentis,* is a species with a very limited distribution, known only in PRNS and one other occurrence in Mendocino County. This year North coast phacelia inventories covered seventy-three hectares of coastal prairie and coastal bluff habitat. No new occurrences were found, however, we noted an increase in abundance at several known populations. The Point Reyes rein orchid, *Piperia elegans* ssp. *decurtata,* is another species limited in its range; it is endemic to the rocky headlands in PRNS. Fifteen hectares of coastal bluff habitat were surveyed, expanding the distribution and abundance of several known populations. Lobb's aquatic buttercup, *Ranunculus lobbii*, grows in seasonally wet ponds. Five ponds were surveyed this season, completing the inventory of all known sag ponds in the Olema Valley.

Thirty miles of trail, crossing through forest and chaparral communities, were searched for Mt. Tamalpais manzanita (*Arctostaphylos virgata*), western leatherwood (*Dirca occidentalis*), and California bottlebrush grass (*Elymus californicus*). Two

hundred and sixty hectares of coastal dune habitat were searched for seven different rare plant species, including two Federally Endangered species (beach layia, *Layia carnosa,* and Tidestrom's lupine, *Lupinus tidestromii*).

We assisted in a rare plant inventory of Golden Gate National Recreation Area (GGNRA) lands north of the Golden Gate Bridge and south of the Bolinas-Fairfax Road. The final report for the inventory is being prepared by Michael Faden, an employee of PRNS based out of the Marin Headlands in the GGNRA.

Monitoring

A total of fifty-six known rare plant populations were monitored this year (Table 2). Dedicated volunteers belonging to the California Native Plant Society carried out a large part of the monitoring effort. PRNS hosts five Federally Endangered plant species that are monitored yearly (robust spineflower is the exception this year, since it was inventoried).

1. Sonoma spineflower, *Chorizanthe valida* (CHVA)
   - Re-designed monitoring strategy and subsequently revised monitoring plan.
   - Work continues on the management plan.
2. Tidestrom's lupine, *Lupinus tidestromii* (LUTI)
   - Monitored in accordance with the 2001 LUTI monitoring plan.
   - Designed Access database for LUTI sampling data and entered all data to date (2001 & 2002 field season data).
3. Sonoma alopecurus, *Alopecurus aequalis* var. *sonomensis* (ALAES)
   - Censused all ALAES populations.
   - Initiated a restoration/research project for ALAES, which involved outplanting over five hundred seedlings at four sites in PRNS. The plants were grown in a greenhouse from seed collected at PRNS in 2001. The plants were monitored throughout the spring, summer, and early fall to measure plant growth and reproductive output.
4. Beach layia, *Layia carnosa* (LACA)
   - Attempted monitoring in accordance with 2001 draft monitoring plan. Due to time constraints and initiating the monitoring effort late in the blooming season (most plants were dried up and difficult to distinguish), monitoring was abandoned.
   - Continued discussion of management options for LACA. This is a challenging species to monitor and discussion is still needed on monitoring strategy, cues to detect change in the populations (i.e. number of LACA individuals, percent cover of non-native plant species, etc.), and the level of change at which management action is required.

The only known occurrence of coast lily, *Lilium maritimum,* in Marin County is at PRNS. This population is located in the Seashore's pastoral zone. Plants in approximately half of the population are not protected by dense shrubs and seldom bloom or set seed because of grazing by cows and/or deer. This year we installed a temporary fence around the portion of the population that was unable to set seed the past two years due to grazing. We monitored the phenology of the plants within the fenced area and noted that six plants flowered this year. The fence will be removed once the plants disseminate their seed. It appears that the temporary fencing is beneficial to the viability

of the population. Further comparative studies may be needed to assess the effect of using temporary fencing through time.

Rare-Plant-A-Thon

In the spring and summer of 2002, PRNS hosted two "Rare-Plant-A-Thons". These weekend events enlisted more than one hundred volunteers in the on-going effort to inventory unrecorded rare plant populations throughout the 71,000-acre Seashore. Volunteers were given a brief training, and were then divided into groups and sent to different areas within the Seashore with instructions to survey for and/or monitor different rare plant species.

As a result of the two "Rare-Plant-A-Thons", twenty-three unrecorded rare plant populations were discovered, documented, and mapped. These included new occurrences of beach layia, Franciscan thistle, Point Reyes ceanothus (*Ceanothus gloriosus* var *gloriosus*), robust spineflower and coastal bluff morning glory. Volunteers also mapped and monitored eighteen known rare plant populations, expanding many of the population boundaries beyond their previously mapped extent. Additionally, Sonoma alopecurus seedlings were outplanted at two sites as part of a restoration/research project.

Impact Assessments

We performed impact assessments and/or plant surveys for a road improvement project at Chimney Rock, a trail re-route at Elephant Seal Overlook, and post-instillation of a wastewater containment system at Johnson's Oyster Company. We assessed the damage to two rare plant species resulting from unauthorized bike use in the saltmarsh at Johnson's Oyster Company.

We assisted in rare plant surveys along residential roads on Inverness Ridge slated for hazardous fuel removal under the Wildland Urban Interface (WUI) Program. The abundance and wide distribution of Mt. Tamalpais manzanita, *Arctostaphylos virgata* (ARVI), in the project area initiated discussion on effectively reducing fuel loading in large and/or dense stands of ARVI without compromising the survival of individual ARVI plants. We developed guidelines for pruning ARVI, to reduce fuel loading, based on the input from professionals who work with this species. WUI personnel will monitor the effectiveness of the pruning guidelines.

Data Management

The rare plant database is now current, meaning that it contains the most current record for each population of all fifty-eight rare plants within PRNS. The database is not yet complete, meaning that it does not contain all records for each population of all fifty-eight rare plants in PRNS. We have nearly twenty years worth of rare plant records and the task of entering them into the database began last year. We have submitted a proposal to hire a data entry assistant for two pay periods to make the database complete. To ensure the safe keeping of the hard copies of the rare plant records, we made a complete duplicate copy and stored each at different facilities. The original copies are housed at the learning center (Hagmeire) and the duplicate set is stored in the resource management building.

Currently, we are developing an Access database to store information collected during rare plant inventories. This includes areas searched, documenting positive and negative searches, notes on habitat types, and suggestions for future searches. An

accompanying ArcView project is also being created to show the spatial representation of the areas inventoried.

Lichens

A lichen chemistry study was initiated at PRNS to assess the concentration and distribution of air pollutants in the park. Jim Bennett, a United States Geological Survey (USGS) researcher, is the head of the project. We collected lichen at twenty-one sites along a north-south transect through the park. The lichens are currently being prepared for chemical analysis at the University of Wisconsin Soil and Plant Analysis Laboratory in Madison, WI. Jim will produce a report with the results of the chemical analysis and provide a copy to the park in addition to publishing the information is a scientific journal.

Ongoing Projects

Currently, we are working on several projects that synthesize and explain, in a comprehensive manor, the past twenty years of work on rare plants at PRNS. The PRNS Rare Plant Status Report will summarize all the information to date for each rare plant species in the park. This will include the number of populations, maps showing their locations, methodologies for censusing, criteria for defining a population, and survey and management suggestions. The PRNS Rare Plant Inventory Report will document the areas of the park searched during the 2001 & 2002 inventory seasons. The report will include maps showing the areas searched and information about the blooming season when the survey was conducted, the rare plants targeted during the search, positive and negative searches, and notes on habitat types. It will also prioritize the areas left to inventory.

Table 1. New rare plant populations recorded in the 2002 inventory. The figures include data collected during the Rare-Plant-A-Thons.

Species	# of new occurrences
Abronia umbellata ssp. breviflora	1
Arabis blepharophylla	1
Arctostaphylos virgata	3
Calystegia purpurata ssp. saxicola	7
Castilleja ambigua ssp humboldtiensis	1
Ceanothus gloriosus var gloriosus	2
Chorizanthe robusta	2
Cirsium andrewsii	2
Elymus californicus	1
Fritillaria affinis var. tristulis	7
Fritillaria liliaceae	1
Gilia capitata ssp chamissonis	7
Gilia millefoliata	5
Hesperevax sparsiflora var. breviflora	1
Lasthenia macrantha var. macrantha	3
Layia carnosa	1
Limnanthes douglasii ssp. sulphurea	1
Linanthus grandiflorus	1
Linanthus rosaceus	11
Microseris paludosa	1
Polygonum marinense	1
Ranunculus lobii	3
Sidalcea calycosa ssp. Rhizomata	2
Triphysaria floribunda	2
Total	**67**

Table 2. Rare plant populations monitored in 2002. The figures include data collected during the Rare-Plant-A-Thons.

Species	# of populations monitored
Abronia umbellata ssp. breviflora	1
Alopecurus aequalis var. sonomensis	4
Arabis blepharophylla	4
Blennosperma nanum var. robustum	2
Campanula californica	5
Chorizanthe valida	2
Fritillaria affinis var. tristulis	1
Fritillaria liliaceae	2
Lasthenia macrantha var. macrantha	2
Layia carnosa	1
Lilium maritimum	1
Limnanthes douglasii ssp. sulphurea	1
Linanthus grandiflorus	1
Lupinus tidestromii	7
Monardella undulata	3
Perideridia gairdneri var. gairdneri	4
Phacelia insularis var. continentis	7
Piperia elegans ssp. decurtata	2
Sidalcea calycosa ssp. rhizomata	1
Truphysaria floribunda	5
Total	56